

HAMAGUCHI *et al.*, US Appl. 10/633,621
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IN THE CLAIMS:

1. (Currently Amended) A magnetic disk apparatus comprising:
a magnetic disk holding data by magnetic information in tracks on a magnetic recording film;
a magnetic head with a slider having a heat element to locally heat said magnetic disk, a write element to apply a magnetic field modulated by an electric signal to an area of said magnetic disk heated by the heat element, and a read element to convert the magnetic information on said magnetic disk into an electric signal, wherein the write element maintains a static position with respect to a body of the slider, and wherein the heat element and the write element are mutually differing components from one another and are distanced from one another on the slider;
an actuator to move said magnetic head along a circular-arc in a radial direction of the magnetic disk; and
a realigning an offsetting mechanism that relatively moves a position of the area heated by said heat element and a position of said write element in a width direction of said slider, to dynamically realign the area heated onto a same track as the write element.

2. (Canceled)

3. (Currently Amended) ~~The magnetic disk apparatus according to claim 1, A~~
magnetic disk apparatus comprising:

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a magnetic disk holding data by magnetic information in tracks on a magnetic recording film;

a magnetic head with a slider having a heat element to locally heat said magnetic disk, a write element to apply a magnetic field modulated by an electric signal to an area of the magnetic disk heated by the heat element, and a read element to convert the magnetic information on said magnetic disk into an electric signal, wherein the heat element maintains a static position with respect to a body of the slider, and wherein the heat element and the write element are mutually differing components from one another and are distanced from one another on the slider;

an actuator to move said magnetic head along a circular-arc in a radial direction of the magnetic disk; and

a realigning mechanism that moves a position of the write element in a width direction of said slider, to dynamically realign the write head onto a same track as the area heated by the heat element, wherein said offsetting mechanism is a write element offsetting mechanism to move said write element in the width direction of the slider.

4. (Currently Amended) The magnetic disk apparatus according to claim 1, further comprising a servo circuit that controls said ~~offsetting~~ realigning mechanism so as to move the area heated by said heat element and said write element through the same track during a write operation.

5. (Currently Amended) The magnetic disk apparatus according to claim 4, wherein said servo circuit generates an electric output with an offset amount of said

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~~offsetting~~realigning mechanism corresponding to a yaw angle of said magnetic head
and a temperature in the magnetic disk.

6. (Canceled)

7. (Currently Amended) The magnetic disk apparatus according to claim 4,
wherein said ~~offsetting~~realigning mechanism has a voice coil motor, and wherein
said servo circuit drives said voice coil motor to move the area heated by said heat
element or said write element in the width direction of the slider.

8. (Currently Amended) The magnetic disk apparatus according to claim 4,
wherein said ~~offsetting~~realigning mechanism has a capacitance actuator, and
wherein said servo circuit drives said capacitance actuator to move the area heated
by said heat element or said write element in the width direction of the slider.

9. (Currently Amended) The magnetic disk apparatus according to claim 4,
wherein said ~~offsetting~~realigning mechanism comprises a heat deformation element
and an elastic member deformed by the heat deformation element, and wherein said
servo circuit drives said heat deformation element to move the area heated by said
heat element ~~or said write element~~ in the width direction of the slider.

10. (Currently Amended) The magnetic disk apparatus according to claim 4,
~~further comprising a heating light element movable by said offsetting mechanism and~~
a mirror movable by said ~~offsetting~~realigning mechanism, wherein said servo circuit

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moves the heating light element and the mirror while keeping an approximately parallel positional relation, to move the position of the area on said magnetic disk heated by said heat element in the width direction of the slider.

11. (Currently Amended) The magnetic disk apparatus according to claim 4, ~~further comprising a heating light element movable by said offsetting mechanism, a mirror movable by the offsetting mechanism and an object lens movable by said offsetting~~realigning mechanism, wherein the servo circuit moves the heating light element, the mirror and the object lens while keeping an approximately parallel positional relation, to move the position of the area on said magnetic disk heated by said heat element in the width direction of the slider.

12. (Currently Amended) The magnetic disk apparatus according to claim 4, wherein said servo circuit and said ~~offsetting~~realigning mechanism are connected with at least two drive lines.

13. (Currently Amended) The magnetic disk apparatus according to claim 4, ~~further comprising a conversion table between containing a plurality of listing pertaining to an output value to said offsetting~~realigning mechanism ~~and verses a~~ movement distance of the area heated by said heat element ~~or said write element in~~ the width direction of the slider, wherein said servo circuit refers to said conversion table to determine the output value in accordance with a position of said magnetic head in a radial direction of said magnetic disk.

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14. (Currently Amended) The magnetic disk apparatus according to claim 13, wherein said conversion table is generated by adjusting conversion data by performing test writing processing and reading processing, while changing the position of said magnetic head in the radial direction of said magnetic disk, and changing the output value to said realigning mechanism in each radial position.

15. (New) The magnetic disk apparatus according to claim 3, comprising a servo circuit that controls said realigning mechanism so as to move the area heated by said heat element and said write element through the same track during a write operation.

16. (New) The magnetic disk apparatus according to claim 3, wherein said servo circuit generates an electric output with an offset amount of said realigning mechanism corresponding to a yaw angle of said magnetic head and a temperature in the magnetic disk.

17. (New) The magnetic disk apparatus according to claim 3, wherein said realigning mechanism has a voice coil motor, and wherein said servo circuit drives said voice coil motor to move said write element in the width direction of the slider.

18. (New) The magnetic disk apparatus according to claim 3, wherein said realigning mechanism has a capacitance actuator, and wherein said servo circuit drives said capacitance actuator to move said write element in the width direction of the slider.

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19. (New) The magnetic disk apparatus according to claim 3, wherein said realigning mechanism comprises a heat deformation element and an elastic member deformed by the heat deformation element, and wherein said servo circuit drives said heat deformation element to move said write element in the width direction of the slider.

20. (New) The magnetic disk apparatus according to claim 3, wherein said servo circuit and said realigning mechanism are connected with at least two drive lines.

21. (New) The magnetic disk apparatus according to claim 3, comprising a conversion table containing a plurality of listing pertaining to an output value to said realigning mechanism verses a movement distance of the area heated by said heat element in the width direction of the slider, wherein said servo circuit refers to said conversion table to determine the output value in accordance with a position of said magnetic head in a radial direction of said magnetic disk.

22. (New) The magnetic disk apparatus according to claim 21, wherein said conversion table is generated by adjusting conversion data by performing test writing processing and reading processing, while changing the position of said magnetic head in the radial direction of said magnetic disk, and changing the output value to said realigning mechanism in each radial position.

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23. (New) A magnetic disk apparatus comprising:

a magnetic disk holding data by magnetic information in tracks on a magnetic recording film;

a magnetic head with a slider having a heat element to locally heat said magnetic disk, a write element to apply a magnetic field modulated by an electric signal to an area of said magnetic disk heated by the heat element, and a read element to convert the magnetic information on said magnetic disk into an electric signal, wherein the write element maintains a static position with respect to a body of the slider, and wherein the heat element and the write element are mutually differing components from one another and are distanced from one another on the slider;

an actuator to move said magnetic head along a circular-arc in a radial direction of the magnetic disk; and

a realigning mechanism that moves at least one of a position of the area heated by said heat element and the write element in a width direction of said slider, to dynamically realign the area heated onto a same track as the write element during a write operation.

24. (New) A magnetic disk apparatus comprising:

a magnetic disk holding data by magnetic information on a magnetic recording film;

a magnetic head with a slider having a heat element to locally heat said magnetic disk, a write element to apply a magnetic field modulated by an electric signal to an area heated by the heat element, and a read element to convert the magnetic information on said magnetic disk into an electric signal, and wherein the

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heat element and the write element are mutually differing components from one another and are distanced from one another on the slider;

an actuator to move said magnetic head along a circular-arc in a radial direction of the magnetic disk; and

an offsetting mechanism that relatively moves a position of the area heated by said heat element and a position of said write element in a width direction of said slider,

wherein said offsetting mechanism is a heat area offsetting mechanism to move the area heated by said heat element in the width direction of the slider, and wherein said write element is immovable with respect to said slider.

25. (New) A magnetic disk apparatus comprising:

a magnetic disk holding data by magnetic information on a magnetic recording film;

a magnetic head with a slider having a heat element to locally heat said magnetic disk, a write element to apply a magnetic field modulated by an electric signal to an area heated by the heat element, and a read element to convert the magnetic information on said magnetic disk into an electric signal, and wherein the heat element and the write element are mutually differing components from one another and are distanced from one another on the slider;

an actuator to move said magnetic head along a circular-arc in a radial direction of the magnetic disk; and

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an offsetting mechanism that relatively moves a position of the area heated by said heat element and a position of said write element in a width direction of said slider,

wherein said offsetting mechanism is a write element offsetting mechanism to move said write element in the width direction of the slider, and

wherein said heat element is immovable with respect to said slider.

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